

90148



901480



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

For Supervisor's use only

# Level 1 Mathematics, 2007

## 90148 Sketch and interpret graphs

Credits: Three  
9.30 am Tuesday 20 November 2007

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should answer ALL the questions in this booklet.

You should show ALL working.

If you need more space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–14 in the correct order and that none of these pages is blank.

**YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.**

For Assessor's use only		Achievement Criteria	
Achievement		Achievement with Merit	Achievement with Excellence
Sketch, and interpret features of, graphs.	<input type="checkbox"/>	Sketch, and interpret features of, graphs.	<input type="checkbox"/>
		Write equations for linear graphs.	<input type="checkbox"/>
Overall Level of Performance (all criteria within a column are met)			
<input type="checkbox"/>			

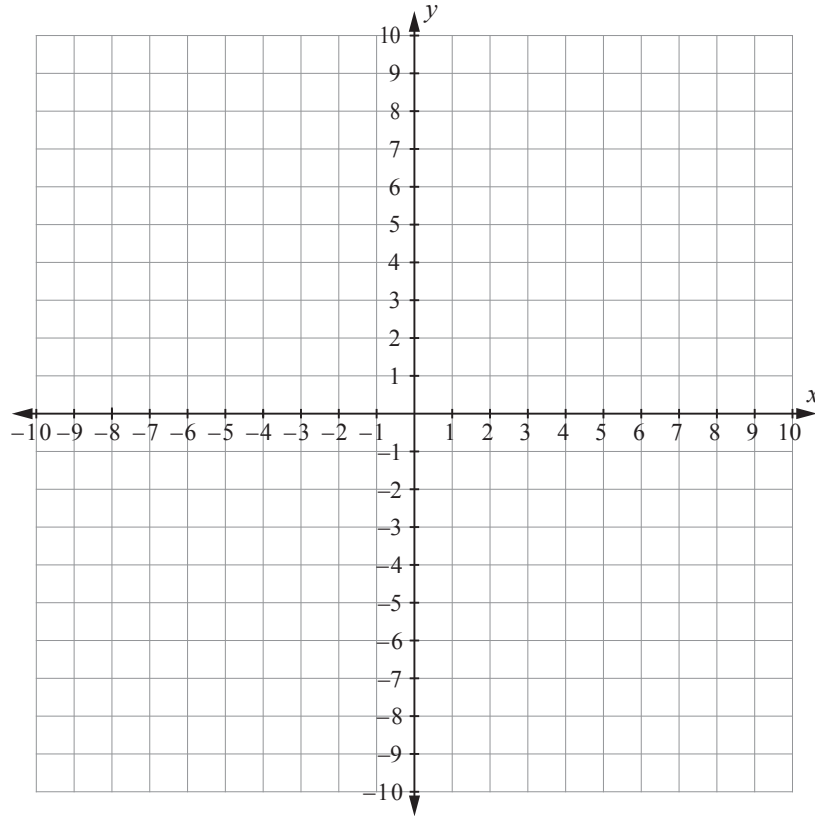
You are advised to spend 30 minutes answering the questions in this booklet.

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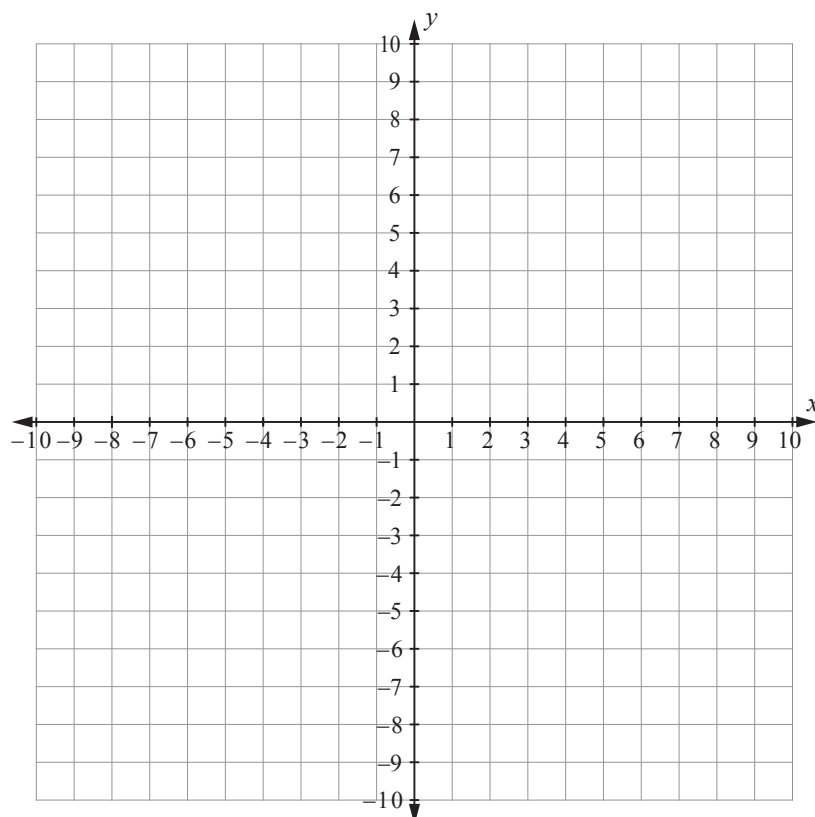
### QUESTION ONE

Use the grids alongside to draw the graphs of:

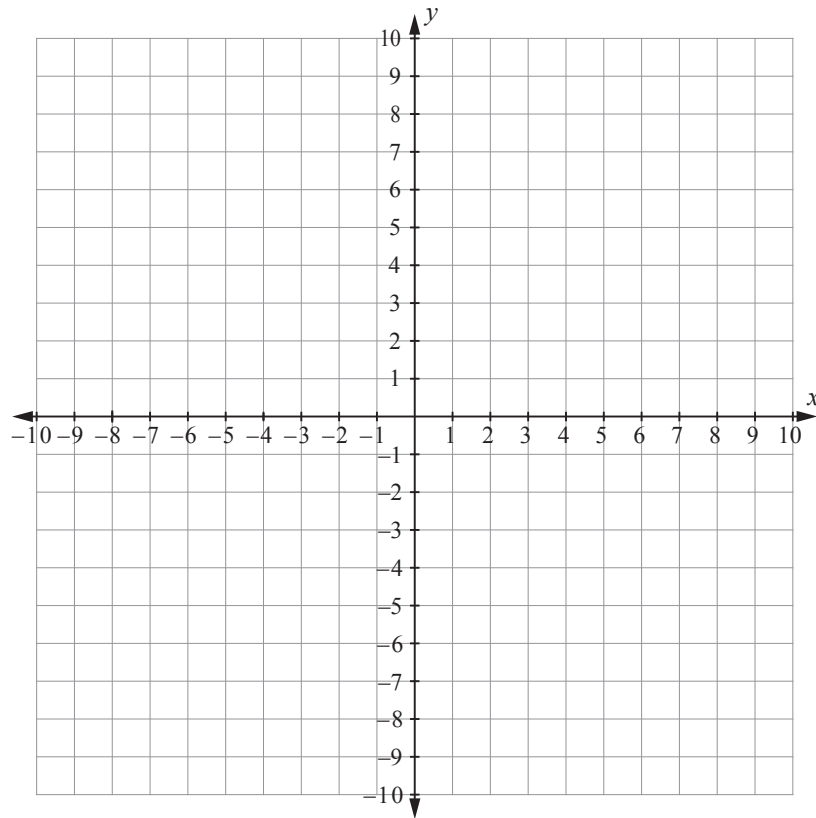
(a)  $y = \frac{1}{3}x - 2$



(b)  $x = -3$



(c)  $y = x(x - 2)$



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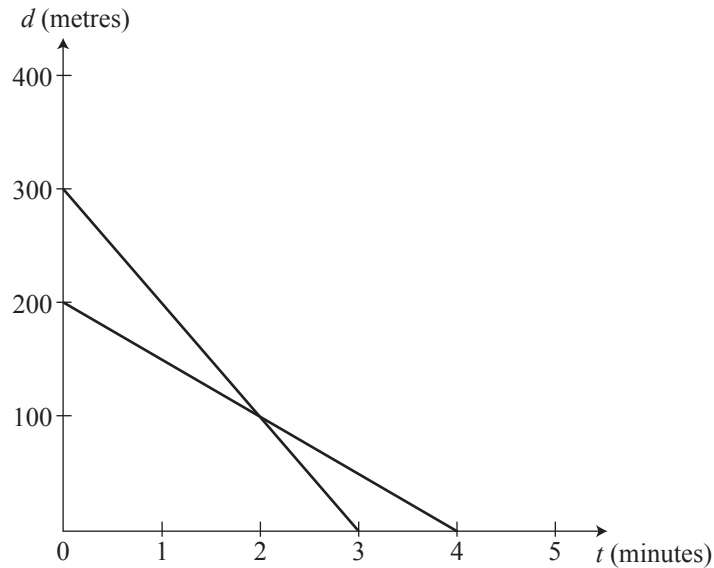
**Note: If you need to redraw any of these graphs, you will find blank grids on page 11.**  
**Make sure you show which question you are answering beside each new grid used.**  
**Make sure it is clear which graph you want marked.**

## QUESTION TWO

Lynda **walks** from her home to the ice cream shop.

Ruth **runs** fast from her home to the ice cream shop.

Their distances,  $d$ , from the ice cream shop are shown on the graph below, where  $d$  is the distance in metres and  $t$  is the time in minutes.



- (a) What is the distance of Lynda's home from the ice cream shop?

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- (b) How fast (in metres per minute) did Lynda walk between her home and the ice cream shop?

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- (c) How long did it take Ruth to run from her home to the ice cream shop?

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- (d) Write the equation for Ruth's distance,  $d$ , from the ice cream shop.

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- (e) Lynda and Ruth both left home at 4.30 pm to go to the ice cream shop.

When would they be the same distance from the ice cream shop?

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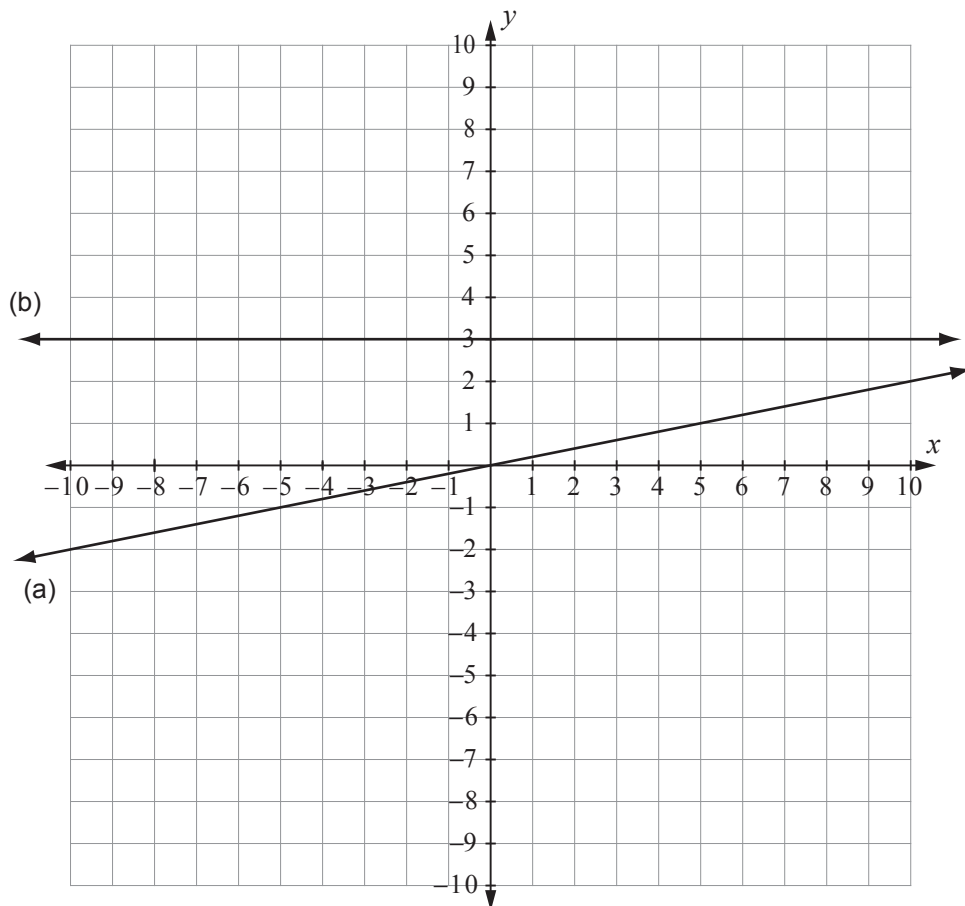
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**QUESTION THREE**Assessor's  
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Write the equations of the lines drawn on the grid below.

(a) \_\_\_\_\_

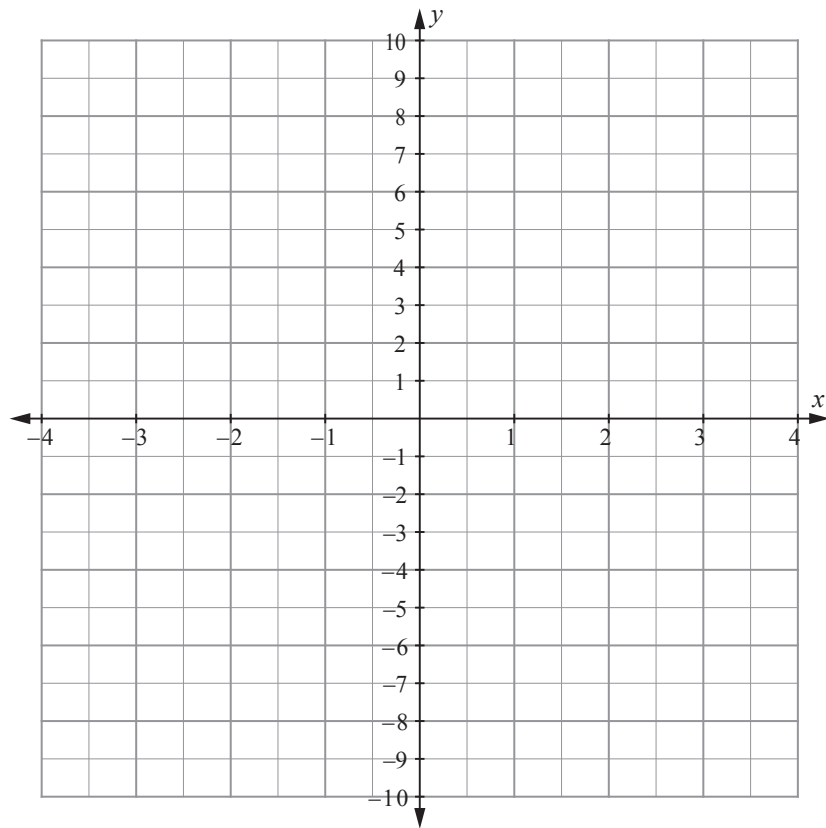
(b) \_\_\_\_\_



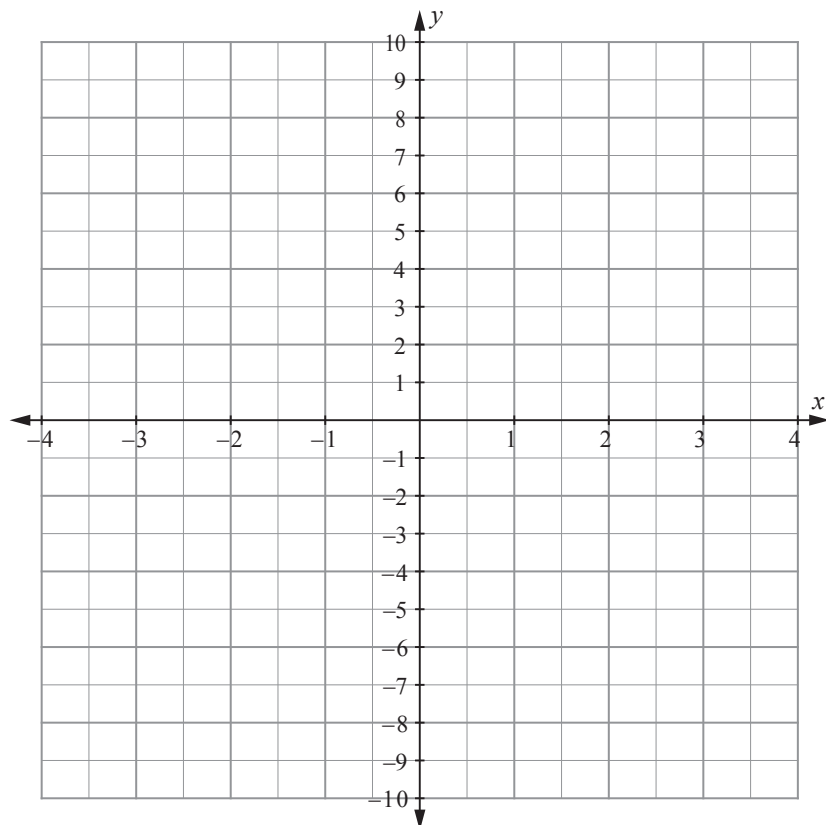
**QUESTION FOUR**

Sketch the following graphs on the axes below.

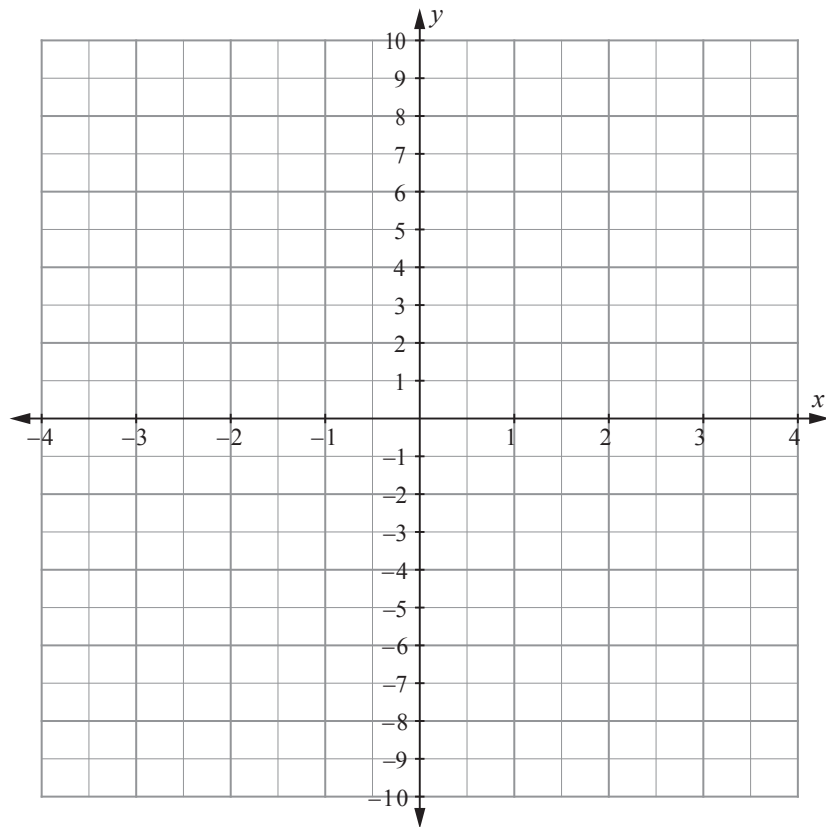
(a)  $2y + 3x = 6$



(b)  $y = 2x^2 - 8$



(c)  $y = -x(x - 1) - 2$   
 $= -x^2 + x - 2$



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**Note: If you need to redraw any of these graphs, you will find blank grids on page 12.**  
**Make sure you show which question you are answering beside each new grid used.**  
**Make sure it is clear which graph you want marked.**



**QUESTION FIVE**

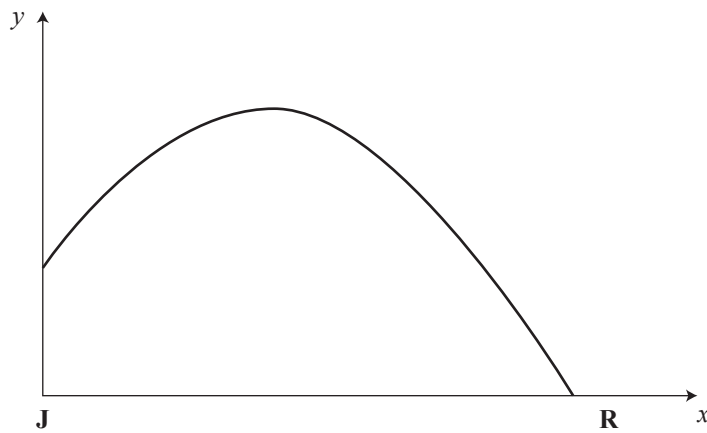
John and Richard were playing with a soccer ball.

The graph shows the height of the ball above the ground, during one kick from John, **J**, towards Richard, **R**.

The height of the ball above the ground is  $y$  metres.

The horizontal distance of the ball from John is  $x$  metres.

The graph has the equation  $y = 0.1(9 - x)(x + 1)$ .



- (a) Write down the value of the  $y$ -intercept **and** explain what it means in this situation.

$y$ -intercept is \_\_\_\_\_

explanation: \_\_\_\_\_

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- (b) What is the greatest height of the ball above the ground?

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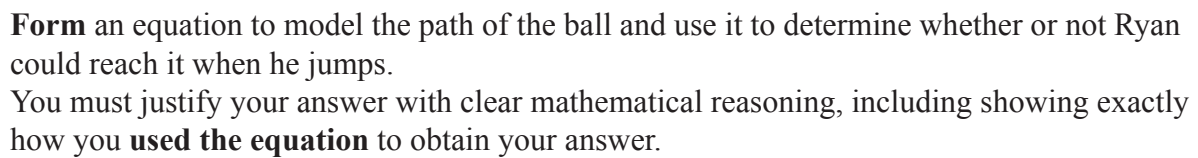


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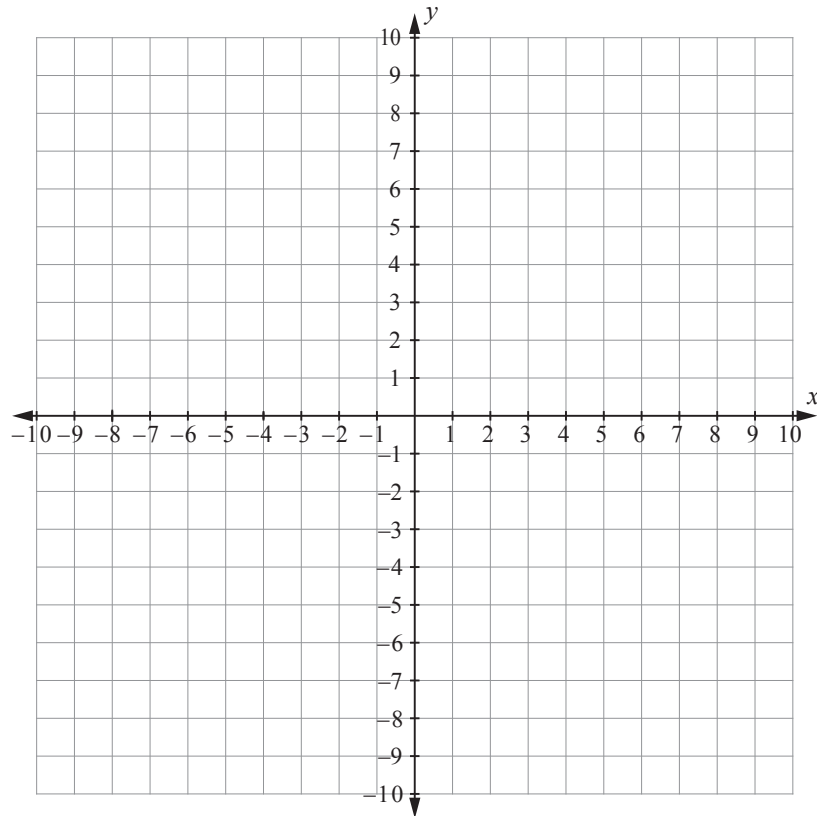
- Diagram is  
NOT to scale

[illegible]

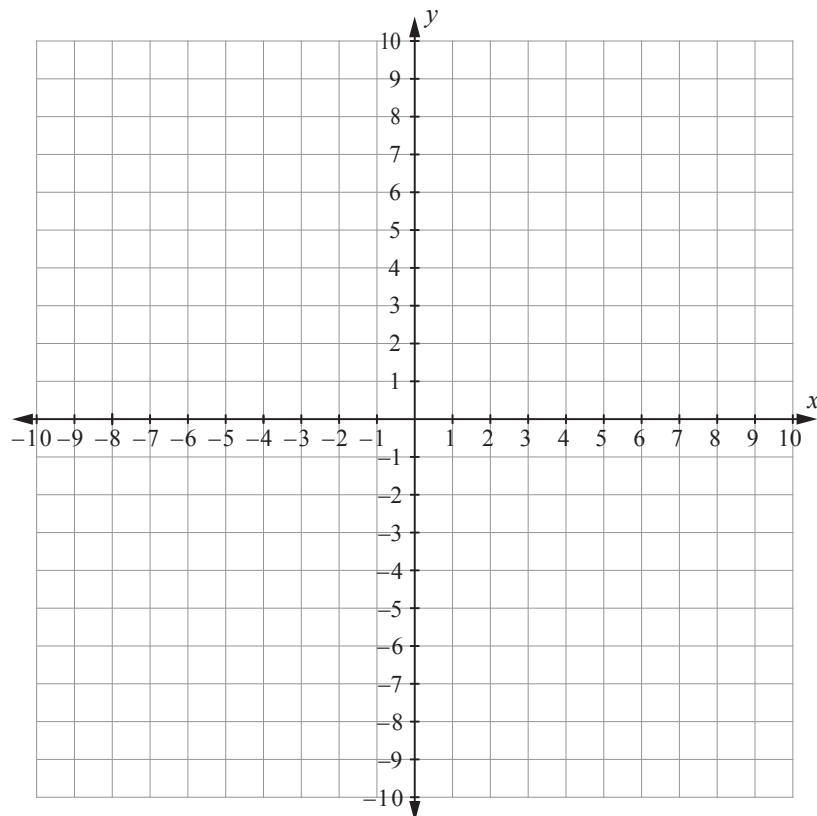
Use these grids if you need to redraw any of the graphs on pages 2 and 3.  
Make sure that you show which questions you are answering if you use these grids.  
Make sure it is clear which graph you want marked.

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Question \_\_\_\_\_



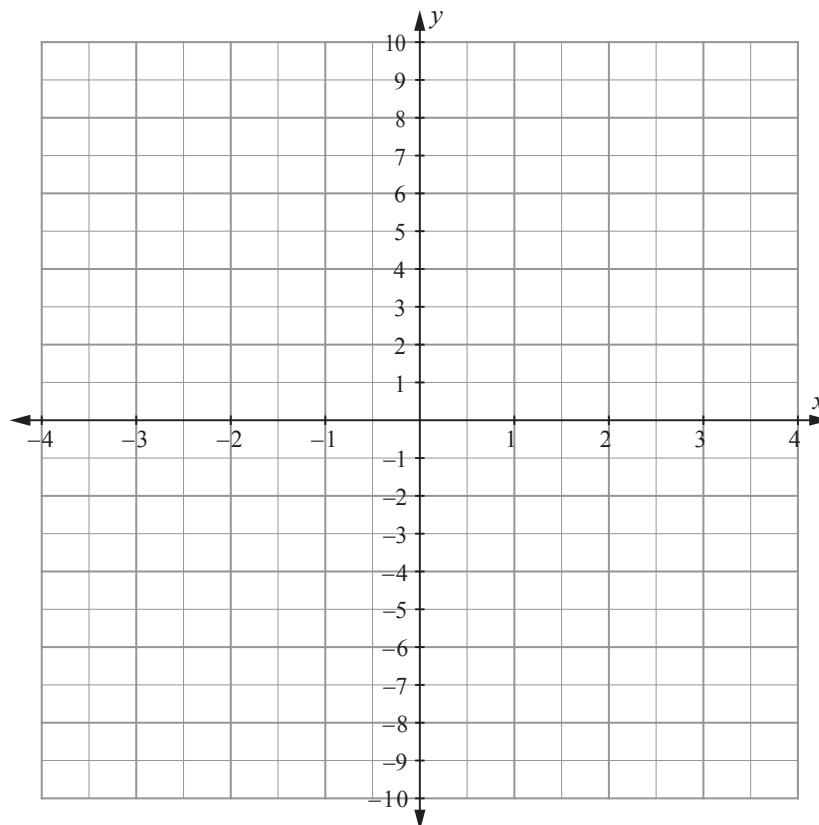
Question \_\_\_\_\_



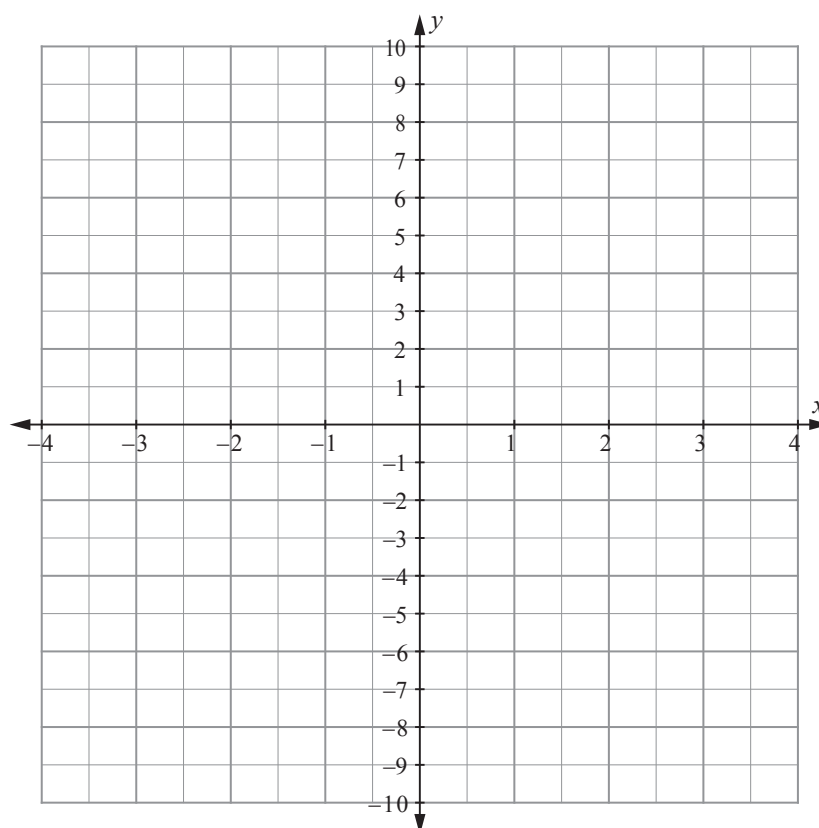
Use these grids if you need to redraw any of the graphs on pages 7 and 8.  
Make sure that you show which questions you are answering if you use these grids.  
Make sure it is clear which graph you want marked.

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Question \_\_\_\_\_



Question \_\_\_\_\_



**Extra paper for continuation of answers if required.  
Clearly number the question.**

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Question number

[illegible]

[illegible]



